



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,959	12/02/2003	Mathews J. Thundyil	5741	2834
44341	7590	09/08/2006		
JACOBSON & JOHNSON ONE WEST WATER STREET, SUITE 285 ST. PAUL, MN 55107			EXAMINER DRODGE, JOSEPH W	
			ART UNIT 1723	PAPER NUMBER

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,959

Applicant(s)

THUNDYIL ET AL.

Examiner

Joseph W. Drodge

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,5,7-12 and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Bayley et al Great Britain patent 1,443,704. Bayley et al disclose extraction of unwanted liquid from a fluid (liquid) using a solvent extraction liquid which is immiscible with at least one of the liquid or fluid, in a manner to result in an emulsion comprising droplets or microdispersed droplets of the unwanted liquid in mixing chamber 5,15, and capturing and coalescing the dispersed droplets into larger droplets in a coalescer medium 4,17, that may contain fibers (see column 2, lines 70-74 and column 3, line 26) [as in claim 30], and then separating the larger droplets from the fluid phase, the separated droplet phase and the fluid phase passing to separate outlet (see, in particular, column 1 of page 1, lines 9-24; column 2 of page 1, lines 58-74; column 2 of page 2, lines 70-125; and column 2 of page 5, line 84-column 1 of page 6, line 2 for the process generally and column 2 of page 2, lines 104-125 for separation of phases and separately outletting the phases).

Formation of microdispersed microdroplets of the unwanted liquid to be dispersed is discussed at page 5, column 2 of Bayley, lines about 88-101. Since the unwanted liquid may be or comprise water, the interaction of droplets of unwanted liquid with a partially miscible solvent inherently is a polar interaction (page 2, lines 4-13 with page 1, lines 9-19).

Art Unit: 1723

Bayley et al also disclose the following details of dependent claims: for claim 2, introduction of fluid streams (for instance in figure 2 a fluid 19 is introduced into a stream of fluid flowing from inlet 20 towards coalescing packing 17 and in figure 3 streams from conduits 28 from successive stages contact other streams flowing through conduit 29), for claims 5 and 6, the solvent or liquid comprising water or water droplets (page 2, column 1, lines 7-13), for claim 7, there inherently being a significant specific gravity difference between phases being separated (see column 1 of page 2, lines 10-11 giving kerosene and water as phases being separated), for claims 8-12, the use of a coalescing medium which may be cylindrically shaped so that liquid passes through the medium from inside-out (page 3, column 1, line 26) and being vertically arranged as in claims 9 and 10 and 11, or horizontally arranged for flow thereacross as in claim 12 (figure 2 and column 4, lines 50-53), with at least one of the exit flows being at right angles to the flow towards the coalescing medium (figures 1 and 2, see configuration and orientation of outlets 11,13,21 and 22, outlet chambers formed by baffles 22 and 24 and orientation of inlets 9 and 10 or 19 and 20 entering the mixing chamber relative to the orientation of the outlets).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1723

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3,4,6,13-17,20-29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bayley et al in view of Marsden et al patent 2,469,883, Baranowski patent 3,561,193 and Kobayashi et al patent 5,206,330.

Bayley et al disclose extraction of unwanted liquid from a fluid (liquid) using a solvent extraction liquid which is immiscible with at least one of the liquid or fluid, in a manner to result in an emulsion comprising droplets or microdispersed droplets of the unwanted liquid in mixing chamber 5,15, and capturing and coalescing the dispersed droplets into larger droplets in a coalescer medium 4,17, that may contain fibers (see

Art Unit: 1723

column 2, lines 70-74 and column 3, line 26) [as in claim 30], and then separating the larger droplets from the fluid phase, the separated droplet phase and the fluid phase passing to separate outlet (see, in particular, column 1 of page 1, lines 9-24; column 2 of page 1, lines 58-74; column 2 of page 2, lines 70-125; and column 2 of page 5, line 84-column 1 of page 6, line 2 for the process generally and column 2 of page 2, lines 104-125 for separation of phases and separately outletting the phases).

All of these claims differ in requiring that the fluid containing the unwanted liquid is silicone, or that the unwanted liquid comprises an acid, or both.

However, Marsden et al at column 4, lines 52-75 teaches removing of residual sulfuric acid from silicone manufacturing, by contacting the silicone with a solvent or water, or a mixture of water and hydrocarbon solvent to form an emulsion or dispersion containing droplets, followed by coalescing the droplets, while Kobayashi et al teach removing of residual sulfuric acid in the manufacture of silicone, by processes comprising contacting with a large volume of water (Abstract, column 3, lines 13-37). Baranowski teaches removing of impurities in an emulsion/droplet form that include acids that are dispersed in a liquid phase that may comprise silicone, by a process including coalescing (column 1, line 27-column 2, line 18 and column 3, lines 30-35). The teaching references also suggest polar interaction of contaminants and solvents such as certain oils, since acid contaminants may be associated with water contaminant (see, for

instance, Baranowski at column 1, line 64-column 2, line 7 and column 2, lines 15-18).

Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the Bayley et al process to removing of impurities including acid in the manufacture of silicone, as taught by Marsden et al, Kobayashi et al and Baranowski, since the sulfuric acid contaminant has the property of forming droplets in an emulsion with silicone and an additional immiscible liquid, that enables it to be effectively removed by coalescing, resulting in a more purified silicone oil product.

Bayley et al also disclose the following details of various independent and dependent claims: for claims 23 and 29, introduction of fluid streams (for instance in figure 2 a fluid 19 is introduced into a stream of fluid flowing from inlet 20 towards coalescing packing 17 and in figure 3 streams from conduits 28 from successive stages contact other streams flowing through conduit 29), for claim 14, the solvent or liquid comprising water or water droplets (page 2, column 1, lines 7-13), for claims 21 and 31, there inherently being a significant specific gravity difference between phases being separated (see column 1 of page 2, lines 10-11 giving kerosene and water as phases being separated), for claims 16-20 and 32, the use of a coalescing medium which may be cylindrically shaped so that liquid passes through the medium from inside-out (page 3, column 1, line 26) and being vertically arranged as in claims 24-26, or horizontally arranged for flow thereacross as in claim 27 (figure 2 and column 4, lines 50-53), with at least one of the exit flows being at right angles to the flow towards the coalescing

Art Unit: 1723

medium (figures 1 and 2, see configuration and orientation of outlets 11,13,21 and 22, outlet chambers formed by baffles 22 and 24 and orientation of inlets 9 and 10 or 19 and 20 entering the mixing chamber relative to the orientation of the outlets.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bayley et al in view of Marsden et al, Baranowski patent 3,561,193 and Kobayashi et al as applied to claim 13 above, and further in view of Breman et al patent 6,413,429.

These claims further differ in requiring that the formed droplets are of a 10 micron or smaller size. However, Breman et al teach at column 1, line 61-column 2, line 12, etc. that when solvent extraction is controlled so as to form microdispersions of droplets of the claimed micron size, greater efficiency of separation of ensuing coalescing stages is realized. It would have been further obvious to have operated the Bayley et al process so as to produce the claimed microdispersion of very small droplet diameter, as taught by Breman et al, to realize a greater separation efficiency in the coalescing medium.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bayley et al in view of Marsden et al, Baranowski patent 3,561,193, Kobayashi et al and Breman et al patent 6,413,429.

These claims further differ in requiring that the formed droplets are of a 10 micron or smaller size. However, Breman et al teach at column 1, line 61-column 2, line 12,

Art Unit: 1723

etc. that when solvent extraction is controlled so as to form microdispersions of droplets of the claimed micron size, greater efficiency of separation of ensuing coalescing stages is realized. It would have been further obvious to have operated the Bayley et al process so as to produce the claimed microdispersion of very small droplet diameter, as taught by Breman et al, to realize a greater separation efficiency in the coalescing medium.

Applicant's arguments filed on July 17, 2006 have been fully considered but they are not persuasive. It is argued that Bayley does not disclose a polar interaction of unwanted liquid with a solvent to form a plurality of microdispersed droplets containing the unwanted liquid to be separated by coalescence.

Formation of microdispersed microdroplets of the unwanted liquid to be dispersed is discussed at page 5, column 2 of Bayley, lines about 88-101. Since the unwanted liquid may be or comprise water, the interaction of droplets of unwanted liquid with a partially miscible solvent inherently is a polar interaction (page 2, lines 4-13 with page 1, lines 9-19).

It is argued that the stream from which Bayley's liquid to be recovered is itself a liquid/liquid dispersion, whereas in the present invention, there is no dispersion prior to the introduction of the extracting liquid, or no intimate contact between solvent and liquid to be recovered. It is submitted that the instant claims do not preclude a dispersion from existing prior to contact with extracting liquid and also do not preclude intimate contact between liquid to be recovered and solvent.

Art Unit: 1723

For claims having the further limitations that require acids to comprise contaminant and silicone to be desired liquid, the teaching references also suggest polar interaction of contaminants and solvents such as certain oils, since acid contaminants may be associated with water contaminant (see, for instance, Baranowski at column 1, line 64-column 2, line 7 and column 2, lines 15-18).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1723

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

August 23, 2006


JOSEPH DRODGE
PRIMARY EXAMINER